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Thematic cluster for the implementation cycle 2008-2009 — review session

Report of the regional implementation meeting for Asia and the Pacific**

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** Organized by the Economic and Social Commission for Asia and the Pacific in collaboration with the Regional Office for Asia and the Pacific of the Food and Agriculture Organization of the Untied Nations, the Centre for Alleviation of Poverty through Secondary Crops' Development in Asia and the Pacific, the Asia Regional Coordinating Unit of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, and the Regional Office for Asia and the Pacific of the United Nations Environment Programme.

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I. Major conclusions and recommendations of the Asia-Pacific regional implementation meeting

1. The Asia-Pacific regional implementation meeting reviewed regional progress in the implementation of the outcomes of the World Summit on Sustainable Development and partnerships for the further application of the Plan of Implementation of the World Summit on Sustainable Development (Johannesburg Plan of Implementation) in the thematic areas of agriculture, land, rural development, drought and desertification.

2. The meeting expressed appreciation for the documents produced by the meeting secretariat, which included thematic reports on agriculture and land, rural development, desertification and drought, developed jointly by the Economic and Social Commission for Asia and the Pacific (ESCAP), the Regional Office for Asia and the Pacific of the Food and Agriculture Organization of the United Nations (FAO), the secretariat of the Asia Regional Coordinating Unit of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, and the International Centre for Drought Risk Reduction. A special report on climate change has been prepared by the Institute for Global Environmental Strategies, and a synthesis paper providing a consolidated assessment of progress in Asia and the Pacific region across the thematic cluster has been prepared by ESCAP.

3. On the basis of the aforementioned documentation, the meeting successfully reviewed the concerns of Asia and the Pacific region regarding the thematic cluster for the sixteenth and seventeenth sessions of the Commission on Sustainable Development. The highlights of the discussion were captured in the Chairperson's summary (see annex). The meeting requested the secretariat to transmit the contents of present report to the Commission on Sustainable Development at its sixteenth session in the appropriate form.

II. Organization of the session

A. Opening, duration and organization

4. The Asia-Pacific regional implementation meeting was held in Jakarta on 26 and 27 November 2007 in collaboration with the ESCAP Centre for Alleviation of Poverty through Secondary Crops' Development in Asia and the Pacific (CAPSA), the Regional Office for Asia and the Pacific of FAO, the Convention secretariat and the Regional Office for Asia and the Pacific of the United Nations Environment Programme (UNEP). The objective of the meeting was to prepare input from the perspective of Asia and the Pacific region for the Commission on Sustainable Development at its sixteenth session in relating to relevant thematic cluster of issues, namely, agriculture, land, rural development, drought and desertification.

5. In his welcoming address, Rezlan Ishar Jenie, Director General for Multilateral Affairs of the Department of Foreign Affairs of Indonesia, noted the achievements of Asia and the Pacific region in economic growth, dramatic poverty reduction and meeting the challenges to environmentally sustainable economic growth. He also noted the importance and significance of the meeting in assessing the

implementation in the region of the outcomes of the World Summit on Sustainable Development in those areas. He expressed confidence that the meeting, given the joint efforts of all the delegates and co-organizers, would make a great contribution to the preparations for the sixteenth session of the Commission on Sustainable Development and show the commitment of Asia and the Pacific region to playing a key role in achieving sustainable development.

6. In his opening statement, Francis Nhema, Minister for Environment and Tourism of Zimbabwe and Chairman of the Bureau for the sixteenth session of the Commission, expressed his support for regional implementation meetings as an integral component of the Commission, giving depth and breadth to its deliberations. He acknowledged the strong interest of member States in participating in that important regional process and expressed his satisfaction with the enthusiastic participation of the major group representatives. He also expressed the hope that the meeting would be fruitful.

7. In the joint statement made on behalf of the meeting co-organizers, Rae-Kwon Chung, Director of the Environment and Sustainable Development Division of ESCAP, highlighted the increasing focus of partner agencies in addressing livelihood issues as well as environmental issues in a simultaneous manner. He emphasized the enormous challenges faced by Asia and the Pacific region given its rapid economic growth and the associated significant impact on the achievement of sustainable development. He underlined in particular, the need to address the thematic issues from the broader sustainable development perspective and the readiness of partner agencies to assist member countries in promoting such a holistic approach.

B. Attendance

8. The session was attended by representatives of the following countries members and associate members of ESCAP: Australia, Bangladesh, Cambodia, China, the Democratic People's Republic of Korea, Fiji, India, Indonesia, the Islamic Republic of Iran, Japan, Malaysia, Pakistan, the Philippines, the Russian Federation, Thailand, Timor-Leste, Turkey, the United States of America and Uzbekistan. The representative of Zimbabwe participated in view of his responsibilities as the Chairman of the Bureau.

9. The following United Nations bodies and specialized agencies were represented: FAO, CAPSA, the Convention and UNEP. The Department of Economic and Social Affairs of the Secretariat was also represented.

10. The following intergovernmental organizations, non-governmental organizations and other entities also attended: the Academy of Disaster Reduction and Emergency Management, the Asian Farmers' Association for Sustainable Rural Development, the Associated Labour Unions and Trade Union Congress of the Philippines, the Asian non-governmental organization coalition for agrarian reform and rural development, the Asian Partnership for the Development of Human Resources in Rural Areas, the Association of Southeast Asian Nations, the Centre for Environment and Sustainable Development India, the Institute for Global Environmental Strategies, the International Centre for Drought Risk Reduction, the International Commission on Irrigation and Drainage, the International Council for Science, the International Council of Women, the International Federation of

Agricultural Producers, the International Federation of Organic Agriculture Movements, the Philippine Women's University, the Sino-Italian Cooperation Programme for Environmental Protection, the Society for Conservation and Protection of Environment, the Subregional Office of the Centre on Integrated Rural Development for Asia and the Pacific in South-East Asia, the Third World Network, Women Organizing for Change in Agriculture and Natural Resource Management and the Commission on Sustainable Development Youth Caucus.

C. Election of officers

11. The meeting elected the following as members of the Bureau: Chairperson, Tri Tharyat, First Secretary, Permanent Mission of Indonesia to the United Nations; Vice-Chairpersons, with one representative per subregion, Chunglin Zang, Deputy Director General of the National Bureau to Combat Desertification of the State Forestry Administration of China; Krishna D. Prasad, Chief Economic Planning Officer of the Ministry of Finance and National Planning of Fiji; Jawed Ali Khan, Director General (Environment) of the Ministry of Environment of Pakistan; Raisa Taryannikova of the Centre of Hydro-meteorological Services of Uzbekistan; and Rapporteur, Gina Nilo, Chief Agriculturist and Chief of the Soil and Water Resources Research Division of the Department of Agriculture, Bureau of Soils and Water Management of the Philippines.

D. Agenda

12. The meeting adopted the provisional agenda (ESD/RIM/2007/L.1), which read as follows:

1. Opening of the meeting.
2. Election of officers and adoption of the agenda.
3. Assessment of progress on international commitments to sustainable agriculture and rural development, land, desertification and drought:

   Presentation of thematic reports on agriculture and land, rural development, desertification and drought, and discussion.
4. Formal statements/comments.
5. Presentation of draft Chairperson's summary.
6. Adoption of the report.
7. Closing of the meeting.

13. The meeting was also associated with the following side events:

(a) A side event on women major group strategies leading to the sixteenth session of the Commission, organized by Women Organizing for Change in Agricultural and Natural Resources Management;

(b) The presentation of a special report on climate change;

(c) Side events on enhancing the participation of major groups from Asia and the Pacific region in the implementation cycle for the sixteenth and seventeenth

sessions, held on 27 November 2007 by the Division for Sustainable Development of the Department of Economic and Social Affairs, ESCAP, the Third World Network and Women Organizing for Change in Agricultural and Natural Resources Management.

E. Acknowledgements

14. The meeting noted with appreciation the collaboration of United Nations bodies and agencies in organizing the meeting, in particular with regard to the preparation of the thematic reports. The meeting also expressed appreciation for the role played by ESCAP, the Convention secretariat and the Department of Economic and Social Affairs in mobilizing financial resources to enable Government representatives and delegates from major groups to participate. The collaboration and contributions of CAPSA, the Regional Office for Asia of FAO, the Asia Regional Coordinating Unit of the Convention, the International Centre for Drought Risk Reduction, the Institute for Global Environmental Strategies and the Regional Office for Asia and the Pacific of UNEP, in the preparations for the meeting, including the preparation of background and synthesis papers, were also acknowledged.

F. Adoption of the report of the meeting

15. The meeting adopted the present report on 27 November 2007.

Annex

Chairperson's summary

The development context of Asia and the Pacific

1. The economies of Asia and the Pacific have been enjoying rapid growth. The region has become both the manufacturing and the agricultural production centre of the world; more than 50 per cent of the world's agricultural crops are produced in the region. As a result, member countries in Asia and the Pacific have made some progress in reducing poverty and improving food security and socio-economic development. However, absolute income gaps between the richest and poorest quintiles, as well as gaps between rural and urban areas in terms of quality of life and livelihood opportunities, are widening across the region, and are viewed with alarm. Poverty-reducing economic growth is still elusive in many countries. At the same time, in many countries public investment in the agriculture sector is declining.

2. The convergence of the agricultural and other economic sectors which use agro-industrial products signals increasing competition for agricultural/natural resources. However, the region has the lowest access to these resources per capita of any global region and accounts for 75 per cent of the world's rural population. Hunger and undernutrition are still critical issues for this region, despite its economic progress. Even after the successes of the green revolution in increasing the yield of crops, food security is again rising on regional agendas in a context of climate change and increasingly frequent natural disasters. As of 2002, there were 548 million undernourished people in the region, and almost one in three children under five is underweight. The still-significant unmet needs in relation to hunger, undernutrition and poverty have profound implications for the demand for land, water and energy.

3. Countries of Asia and the Pacific therefore face great challenges in achieving poverty-reducing agricultural and rural economic growth while at the same time ensuring the sustainable natural resource use needed to sustain such growth. Fiscal policies often encourage intensive resource use and do not provide adequate support for sustainable agricultural practices, including more eco-efficient production. Water and wind erosion, salinization and water logging have severely affected productivity in large parts of central Asia, South Asia, South-East Asia and China. In terms of the number of people affected by desertification and drought, Asia is the most severely affected continent. In many countries, extreme weather events cause landslides and floods. Water availability per capita in Asia is the lowest of all global regions, two thirds that of Africa. Desertification is manifested in many forms throughout the region. Degraded areas exist in most countries, with prominent examples being found in China, India, the Islamic Republic of Iran, Mongolia and Pakistan. The steeply eroded mountain slopes of Nepal and the deforested and overgrazed highlands of the Lao People's Democratic Republic are further examples.

4. Emerging issues for the agricultural sector and rural development include:

(a) Changing patterns of food consumption, processing and retailing and their impact on production (farm sector restructuring), markets, trade, diet and public policy;

(b) A declining relative share of gross domestic product, with implications for regional and global food security;

(c) Declining participation in the farm sector;

(d) The feminization of poverty;

(e) A declining return on investment in agriculture;

(f) The high cost of land and land use for non-agricultural purposes;

(g) Biosecurity risks;

(h) Heightened awareness of food safety issues and trade implications;

(i) Aging rural populations;

(j) The depletion of natural capital and increased competition for resources from other sectors, leading to land-use change (e.g., for energy crops);

(k) Hidden hunger;

(l) More open economies and consequent vulnerability to price fluctuations;

(m) Lack of participation by major groups;

(n) Increased connectivity — knowledge, information, communication and transport;

(o) Declining resources for sustainable development and the diversion of resources to security issues;

(p) Climate change adaptation and mitigation.

5. Where policies, institutions, other aspects of governance and infrastructure are not sufficiently supportive, livelihood opportunities are limited and poverty and food insecurity increase. Small producers, women, organized trade union workers and other vulnerable groups are disproportionately affected. Changing economic and ecological environments pose risks to women and require better analysis and identification. Human security in rural areas is therefore a growing concern.

6. In that context, each country, and the region as a whole, must consider how policies, plans and institutions that impact both rural and urban sectors can ensure that increasing and competing demands for land resources and water are sustainably met while supporting the development of a vibrant and inclusive rural sector. Climate change adds a new dimension to this question. How can this challenge be met in a context of increasing risk of drought and desertification and as-yet-undetermined ecosystem change? Owing to their mainly rural population and vast diversity of agro-climatic conditions, as well as the threat of climate change, the developing countries of Asia and the Pacific face the most important challenges (in terms of both severity and numbers of persons affected) in ensuring sustainable rural livelihoods, despite success in several areas of reform.

General comments on the thematic reports

7. The meeting noted some inconsistencies between the thematic reports. With respect to the background papers which synthesized the reports, their relatively poor performance when subjected to a gender "audit" — due to lack of analysis on

feminization processes, targeted policies, gender-disaggregated data and gender responsive monitoring and evaluation processes — was highlighted.

8. Other omissions were also mentioned, including the failure to cite the increasing recognition and encouragement of regional integration processes, initiatives and activities in the field of sustainable development, such as those undertaken by the Association of Southeast Asian Nations and the South Asian Association for Regional Cooperation.

9. However, it was agreed that the synthesis of the thematic reports presented a comprehensive, holistic and succinct assessment of progress and identification of key issues. The integrated approach taken represented a step forward towards more holistic treatment of the thematic cluster. Major groups suggested that they be given opportunities to provide inputs with regard to the preparation of the main background report in future regional Commission preparatory processes.

Panel and plenary discussions on agriculture and land and rural development

10. The meeting assessed implementation in the following priority areas for action identified by the meeting secretariat, on the basis of the thematic reports, for the thematic issues of agriculture and land and rural development:

(a) Improved food security and nutrition, reduced hunger;

(b) Improved planning and administration, including to ensure equitable participation;

(c) Balanced ecosystem approaches, including optimizing land use and preservation of genetic diversity;

(d) Eco-efficient water and energy use/production;

(e) Equitable trade and economic opportunity;

(f) Mobilization of financing.

11. A multi-stakeholder panel and plenary discussion on agriculture and land and rural development commented on the findings of the synthesis report and the two relevant thematic reports. Participants noted the following lessons learned, emerging issues, constraints and broad areas for policy and other action, which complemented and strengthened those identified in the thematic reports and their synthesis, as set out below.

Initiatives that empower communities have proved successful and will be increasingly important in addressing the needs of small farmers, who are considered as being increasingly vulnerable and require specific support

12. *Natural disaster*. Drought and desertification are the natural disasters which are in focus in this thematic cluster, but the extreme and growing vulnerability to floods, and the need to plan for mitigation of and rehabilitation from catastrophic flood events, was noted. Community-based disaster risk management should be developed.

13. *Land tenure.* Land tenure insecurity is a continuing critical systemic issue in Asia and the Pacific region and is a cause of conflict and human insecurity, with women being particularly affected. The implementation of the outcomes of the International Conference on Agrarian Reform and Rural Development, held in Pôrto Alegre, Brazil, from 7 to 10 March 2006, should be supported.

14. *Investment focus.* The trend towards private sector investment that has reportedly marginalized small producers and mainly benefited large producers requires a specific policy response. Microfinance continues to be one of the most promising forms of investment, but more attention needs to be paid to the direction of investment — investors are increasingly drawn to what are perceived as less risky areas in the off-farm rural sector. While these are important for boosting economic growth, direct investment in agricultural production needs equal attention. Production of high-value crops, in addition to secondary crops, continues to hold poverty-reduction potential, taking into primary consideration household food security and environmental sustainability.

15. *Education.* Education programmes must better address issues of agriculture and food security. Skill-based education offers quicker returns on investments in education than more formal education paths and can boost livelihoods. At the same time, formally educated rural populations hold the key to the successful and situation-specific adaptation of traditional knowledge, techniques and technologies to meet modern challenges. Equal access to education for women and girls is a continuing shortcoming.

16. *"Levelling the playing field": market environments.* Inequity in terms of market access is a continuing concern: the integration of small producers and poverty-reducing economic growth require specific support for more equitable market access. There is a need to address trade policies (such as those which provide perverse incentives and distort trade) that result in inequitable trade environments and thereby marginalize small farmers.

17. *Differentiated strategies.* Effective poverty-reduction strategies will require differentiated approaches targeted at the chronically poor and the transient poor. Positive experiences with respect to decentralization are found where local governments are supported and linked with stakeholders.

18. *Changing risks for women.* Changing economic and ecological environments pose risks to women and require better analysis and identification.

19. *Dependence on fossil fuels and diversification of energy sources.* Dependence on fossil fuel is an increasingly significant economic burden. Small-scale renewable hydropower development and the application of other renewable energy technologies have been successful.

The demand for biofuels and its implications

20. *Energy, agriculture and environmental protection: biofuel demand and land use.* Many delegations from both Governments and major groups presented various perspectives on the issue of biofuel production, in particular its impact on land use. In general, it was agreed that biofuel production held potential for poverty reduction and for meeting not only urban, but also rural, energy needs. On the other hand, increased food prices, increased competition between food- and energy-crop

production and unsustainable land-use practices were negative aspects of biofuel production that required a cautious approach by policymakers.

21. *Implications for food security.* It was noted that in Asia and the Pacific region the per capita availability of land meant that competition between food- and energy-crop production posed a relatively more significant dilemma for efforts to improve food security and sustainable land use, as compared with, for example, the Latin American region. Mechanisms to ensure environmental sustainability in biofuel production, such as guidelines and voluntary certification based on scientific information, are needed. Other renewable sources of energy should be considered.

22. *Conditions for sustainability.* It was noted that biofuel policy research had identified three key "conditions" for the environmental sustainability and economic feasibility of biofuels production and use. The first was that the most eco-efficient energy crops were not input-intensive, taking into account all stages of production and use. The use of fossil fuel in transportation, for example, has been found to lower/eliminate net environmental and economic benefits. The second was that small-scale biofuel producing enterprises that were community-based were the most eco-efficient. The third was that the producing rural community should become a user of the biofuel it produces so as to maximize eco-efficiency.

Interventions that achieve synergies between energy use, economic opportunity, environmental protection and building social capital are showing great promise

23. *Biofuels and biomass.* Both biofuels and energy produced from biomass can play a key role in the transition to renewable energy in rural and urban areas, helping to meet the critical need for energy. Technology for the use of agricultural residues is improving and should also be promoted.

24. *Policy stocktaking.* Fiscal policy should reflect a coherent and strategic approach that promotes synergies between agricultural production and poverty reduction. Policies that impede the growth of organic agriculture, for example, need to be further examined. Caution must be applied with respect to the application of economic instruments: water pricing and payments for ecosystem services can have a negative impact on poverty-reduction efforts because of their impact on access to resources and potential conflict. Such schemes should be supported by scientific studies.

25. *Cooperatives and beyond.* Cooperatives have shown good results and must be strengthened. There must, however, be greater recognition of other forms of intermediation that have been successful, taking into account lessons learned regarding elite capture, poor repayment rates and mismanagement.

The need for balance between rural and urban development

26. *Balancing strategies.* Rural-urban migration and non-farm economic activity reduce pressure on the resource base and can be strategically promoted where there are significant population, poverty and environmental pressures in the farm sector. Conversely, where these pressures are low, agricultural and rural development are critical strategies for poverty reduction.

Mobilizing financing

27. *Public-private partnership arrangements* have been successful in certain cases and are an important and welcome investment modality, but the performance of such arrangements should be reviewed; the public sector does not always benefit to an appropriate extent. Furthermore, where public-private partnership and private investments are concerned, investment and corporate accountability measures should be put in place.

28. *Investment in research.* Research is a critical area which should be promoted and in which investment should be increased, particularly in public research.

Genetically modified organisms — benefits and risks unclear

29. *Genetically modified crops: limited benefits for small farmers and caution is needed.* The experiences of several countries and the concerns of major groups regarding genetically modified organisms and biosecurity issues showed that, in general, the benefits of such seeds for small farmers, general poverty reduction objectives and genetic diversity were not confirmed. Farmers should be able to choose which seeds they would like to use. Many questions remain regarding biosecurity. What are the options, opportunities and safe limits for the use of these technologies? What is the impact on biodiversity? Can the successes match those of the green revolution?

The increasing competition for agricultural resources

30. *Eco-efficient versus intensive agricultural production.* The limited regional resource base and the mounting environmental pressures related to intensive agricultural production mean that future increases in food production will require a focus on developing more efficient, rather than more intensive, agricultural production models. It was noted that the concept of eco-efficiency should be understood as minimizing both the input of environmental resource use and the production of waste and pollution, while at the same time maximizing the economic and social benefit. Eco-efficiency in agricultural production would be achieved through the application of technology, economic principles regarding the allocation of resources and fiscal incentives. Ways of scaling up best practices from pilot to broader projects should be explored.

31. *Demand-side management.* Demand-side policy interventions to support more environmentally sustainable consumption and agricultural production patterns with a view to reducing environmental pressures need to take a gender-balanced approach.

Panel and plenary discussion on mitigation of desertification, land degradation and drought risk

32. The meeting also considered the assessments of implementation in respect of mitigation of desertification, land degradation and drought risk. A multi-stakeholder panel and plenary discussion on mitigation of desertification, land degradation and drought risk commented on the findings of the synthesis report and the two relevant thematic reports. Participants noted the following lessons learned, emerging issues, constraints and broad areas for policy and other action, which complemented and

strengthened those identified in the thematic reports and their synthesis, as set out below.

Renewing commitments to the implementation of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa — a priority

33. *Importance of the Convention.* The Convention serves as the nexus between poverty reduction and ecosystem protection in the drylands, without which mitigation and adaptation to climate change cannot be delivered. The recently enunciated 10-year strategic plan to enhance the implementation of the Convention opened the way for renewed commitment among stakeholders.

34. *Global importance of land issues.* It was stressed that land degradation was not just a local issue. Degraded lands signalled a decline in the flow of ecosystem services which have global benefit. Desertification and land degradation are therefore important global issues. This should be stressed at the sixteenth session of the Commission, and the opportunity used to remind countries to renew their commitments to sustainable development. As such, greater effort and new initiatives to support and reward/compensate actions in developing countries for sustainable land management practices should be considered. Thematic programme networks under the Convention were recognized as good mechanisms to achieve that purpose and therefore need to be further strengthened.

35. *Implementation.* Implementation lags continue to reflect financial and technical constraints at the national level, although good progress had been noted where policy and institutional support encouraged participation by and assistance to farmers, timberland dwellers and other local stakeholders. More support from the international community for the implementation of the Convention was encouraged. Drought is a regional phenomenon that transcends political and natural boundaries. In this regard, the regional approach to mitigating the effects of drought and combating desertification is a critical component in enhancing national preparedness. National action programmes under the Convention should reflect the objectives of the 10-year strategic plan through regional coordination and capacity-building.

36. *International obligations to be put into action.* Asia and the Pacific region recommends, through the regional implementation meeting outcomes, that the international community meet its obligations regarding the effective implementation of the Convention at the national, subregional and regional levels.

37. *Role of science and technology.* Mobilizing scientific and technical competencies can be the key to rehabilitating degraded land, combating desertification and mitigating the effects of drought. The meeting recognized the importance of the role of science and technology and recommended that the Committee on Science and Technology of the Convention be strengthened through scientific cooperation and academic exchange at various levels.

Coordination and harmonization between the sectors responsible for addressing the issue of desertification

38. *Prioritization and harmonization.* Harmonized target-setting is needed as a basis for strengthening coordination. Coordination is needed within large national

programmes at various levels — for example, between national programme management and the local governments who will have to implement them, in particular to better enable such programmes to respond to the problems faced at the local level. Coordination between such programmes is also needed.

Solutions and knowledge

39. *Education for sustainable land management.* Education is important for harnessing, adapting and extending indigenous knowledge. Implementing best practices with social participation is the key to effectively addressing sustainable land and water management issues with a view to combating desertification and mitigating the effects of drought.

Cross-cutting issues

40. Both panels and the ensuing plenary discussions also addressed the following issues, which cut across the thematic cluster.

Implementing energy transition in both urban and rural sectors is more urgent than ever; however it must be approached more carefully than ever

41. *Energy and land-use policy.* Increased access to affordable sources of energy, including renewable energy, underpins sustainable rural development but increasingly influences sustainable land management. In each case, energy, agriculture and land-use policies must be carefully examined to determine that incentives for particular land uses and production systems represent the optimal use of land and do not impact negatively on small producers, food security or ecosystem integrity. The incentives and opportunities provided by biofuels require careful assessment and identification of responses.

Investment in research must be redoubled to bridge the growing gap between current knowledge and the knowledge needed to face future challenges

42. *Multiple challenges.* The need for multidisciplinary research is growing, requiring public investments to address wider societal concerns, including the empowerment of vulnerable groups so that they can effectively respond to drought, desertification, agriculture and rural development, particularly in a context of climate change. Such research should engage and document indigenous/traditional knowledge.

Water resources management is a unifying issue in this thematic cluster, particularly in a context of changing climates

43. *Water: central to sustainable development.* Access to an adequate supply of water of good quality underpins health, livelihoods and resilience to drought. This issue has an impact on each theme in the thematic cluster.

44. *Water infrastructure.* Infrastructure for water storage is increasingly necessary to cope with flood as well as drought. Such storage should take into account country-specific needs. Water storage must be increased via multiple pathways: water storage in soils (green water storage) and reservoirs (blue water storage), and virtual water storage. Reform of the water sector must go hand in hand with greater

investment in infrastructure: upgrading aging infrastructure is a key investment need in many countries of the region. However, infrastructure development must avoid the environmental damage that has characterized some approaches to irrigation development. Natural water infrastructure, such as watersheds (including microwatersheds), must also be managed. Management can be strengthened through incentives for upstream watershed managers from downstream watershed management beneficiaries.

45. *Fiscal policy.* Fiscal policies should provide incentives for water storage and harvesting, including through tax breaks.

46. *Water-use efficiency and demand-side management in both urban and rural sectors.* The ongoing urbanization process implies the need for a greater emphasis on water-use efficiency and demand-side management in both urban and rural areas; water-sharing and allocation policies must encourage efficiency of use and the equitable sharing of the benefits and costs of water services.

Farmers

47. *Challenges.* Farmers are at the core of this thematic cluster: action must be taken by farmers if progress is to be made on any of the thematic issues. These challenges include achieving a balance between keeping people on the farms and reducing the burden on the land where there are too many farms; keeping productivity high in low-productivity areas; guarding against natural disaster; empowering farmers in the challenge of improving food security; and increasing the participation of small producers.

48. *Investments and resilience.* Farmers, primarily small-scale producers and poor farmers, who are in the majority, are currently the biggest investors in the agriculture sector, in terms of innovation, traditional knowledge, seeds, undervalued labour and land. Innovative financing must match this investment; farmer suicides attest to the serious lack of financial support and to their financial vulnerability. The development of insurance schemes for farmers against, for example, losses due to drought, must be supported. Entrepreneurship skills must be developed in farmers; support services must be provided to develop skills at all stages of production and trade.

49. *Taking stock.* Policymakers in developing countries must assess, compare and analyse the performance of successful and less successful farmers in developed and developing countries, to see where policies can better support farmers. Such analysis should take account of farmers' access to and control over natural resources, and the entire production and consumption cycle, in a whole-system approach. Equally important to the assessment of economic performance will be the assessment of the environmental and social impact of different farming systems.

50. *Provision of ecosystem services.* The sustainable management of resources by farmers provides ecosystem services to the wider community, for example, by reducing emissions of greenhouse gases or reducing soil erosion and sedimentation. Farmers are also dependent on ecosystem services.

51. *Incentives.* Innovative incentives for sustainable land management must be provided to farmers. Research support must be extended, for example, so that the contribution of various soil management techniques on soil carbon sequestration, can be assessed as a possible basis for carbon market investments in those

ecosystem services. Other innovative incentives are needed for farmers who provide other types of ecosystem services which benefit the wider society but are currently faced with shouldering the costs of the provision of those services.

52. *Organic agriculture.* Niche production, as in organic agriculture, can be supported through collaboration between developed and developing countries. More than one delegation noted that any fiscal incentives provided for production based on genetically modified crops could be better directed to support agricultural production based on organic agriculture.

53. *Farmers as part of operational climate change preparedness systems.* Wide information dissemination and strong extension support is needed by farmers. Farmers rely on the information disseminated by early-warning systems, but can themselves be important providers of data/information to support such early-warning systems.

Climate change adaptation

54. *Country impact: already under way.* Several countries and United Nations agencies reported the adverse impact of climate change, ranging from droughts, desertification, floods, melting glaciers, extreme weather events, loss of biodiversity and sea-level rise. Climate change already threatens food security. Efforts to address disaster risk reduction through early-warning systems are required.

55. *Gender.* Understanding women's issues is key for developing effective responses. The impact and responses to climate change are differentiated by gender on the basis of social rules and societal expectations, as well as of access to critical resources and livelihood opportunities.

56. *Water resources management.* Adaptation to climate change means better drought preparedness. More political commitment to climate change adaptation and drought preparedness is needed.

57. *Climate variability and early warning.* Drought risk reduction relies on early-warning systems with strong information-dissemination mechanisms that can be linked directly to farmers as part of the operational aspect of drought preparedness. Long-range planning can then influence cropping practices to adapt them to expected weather and so mitigate the severe losses faced by many farmers.

58. *Environmental knowledge.* Climate change adaptation strategies should increasingly rely on local environmental knowledge.

59. *Funding for adaptation.* Sufficient funding should be made available for measures to adapt to climate change.

Land is becoming a more valuable resource than ever and its use is being optimized, while increasing access to land as a basis for sustainable livelihoods is increasingly critical for human security

60. *Balanced ecosystem approaches.* Rural development, agriculture and land development communities must begin to think in the frame of ecosystems. Eco-efficiency of water use and ecosystem approaches reinforce each other and support the development of a holistic view of sustainable agriculture, land use and rural development.

61. *Sustainable land management: a cross-cutting strategy.* Combating land degradation, desertification and drought is key for mitigating the impact of climate change, reducing poverty and protecting biodiversity. Sustainable land-management practices stress indigenous knowledge application and drought preparedness. Finding ways to attract funding for sustainable land management, in particular through the preparation and implementation of national action plans under the Convention, is important.

Additional observations

62. Governments were invited to make formal statements outlining the key developments in national responses to major challenges in the thematic areas. Representatives of each major group also delivered statements. In addition to the issues covered above, the following observations were made in the context of regional and global follow-up through the Commission process:

(a) The importance of global partnership — common and differentiated responsibility;

(b) The transboundary nature of climate change and its impact on land-related aspects of national development, needing subregional/regional cooperation;

(c) International actions to address climate change must be fully compatible with the process of economic and social development in developing countries;

(d) Attention to international trade liberalization as a challenge facing agriculture and rural development, especially for agricultural exporting countries;

(e) National capacity-building focusing on governance/law enforcement aspects;

(f) The importance of complementary reforms;

(g) Synergy with national activities to attain the Millennium Development Goals and the importance of links between progress in agrarian reforms, increased agriculture production and the improvement of the living standards of rural populations.